

REMARKS

The foregoing amendment and the following arguments are provided generally to impart precision to the claims, by more particularly pointing out the invention, rather than to avoid prior art.

New claim 87 is added. Claims 1-69 and 72-87 are pending.

Applicant thanks the examiner for pointing out the allowable subject matter in claims 1-10, 22-25, 31-37, 44-49, 54-56, 63-64, 67, 73-74, 76, 78, and 80-86. Claims 65-66 and 68-69 were objected to for being dependent upon a rejected base claim.

In rejecting claims 12-21, 26-30, 38-43, 50-53, 57-61, 72, 75, 77 and 79, the Office Action asserted that the use of the frequencies of Johnson (U.S. Patent No. 6,239,765)/Kodulkala (U.S. Patent No. 6,215,402) in Marsh et al. would not have contradicted the objective of Marsh (U.S. Patent No. 5,726,630) to avoid weak or null interrogation signal zones caused by combination of direct or reflected signals. Applicant respectfully disagrees.

When tags are interrogated by a first interrogation signal, there will be first weak or null interrogation signal zones caused by combination of direct or reflected signals. When a second interrogation signal is used, there will be second weak or null interrogation signal zones caused by combination of direct or reflected signals.

Now consider the change of the first weak or null interrogation signal zones relative to the second weak or null interrogation signal zones when the frequencies of the first and second interrogation signals are changed.

Initially, when the frequency difference between the first and second interrogation signals increases from zero, the first weak or null interrogation signal zones and the second weak or null interrogation signal zones move apart. When there is no overlapping area between the first and second weak or null interrogation signal zones, the overall interrogation system does not have a zone of weak or null interrogation signals. A transponder will be either outside the first weak or

null interrogation signal zones associated with the first interrogation signal, or outside the second weak or null interrogation signal zones associated with the second interrogation signal.

However, if the frequency difference is further increased, some of the weak or null interrogation signal zones will move towards other weak or null interrogation signal zones and thus again cause overlapping in the weak or null interrogation signal zones. The overlapping in the first and second weak or null interrogation signal zones will result in certain areas having weak or null interrogation signals even when both interrogation signals are used, which would defeat the Marsh's objective to avoid weak or null interrogation signal zones by using two interrogation signals of different frequencies.

While it is apparent that a small offset in frequency between the first and second interrogation signals can provide the benefit of avoiding the weak or null interrogation signal zones, such a benefit could be at least partially erased by further increasing the frequency offset.

Marsh does not disclose how to properly choose the frequencies to avoid overlapping in the weak or null interrogation signal zones when the frequency difference between the interrogation signals are large. In Col. 6, lines 15-18 and lines 35-40, Marsh discloses the use of 910 MHz, 915 MHz and 920 MHz for interrogation signals, which are only 5 MHz apart (< 1% apart in frequency). Thus, the system of Marsh is limited to interrogation signals with small offset for the purpose of avoiding weak or null interrogation signal zones.

Thus, to avoid defeating the Marsh's objective of eliminating weak or null interrogation signal zones, an ordinary person skilled in the art would not use the frequencies and/or the antennas suggested in Johson/Kodulkala.

Further, Marsh teaches away from using widely separated frequencies, by using the means of each transponder that has a relatively broad reception bandwidth (see, e.g., abstract of Marsh) to receive the interrogation signals.

Thus, at least for the above reasons, an ordinary person skilled in the art would not combine Marsh and Johson/Kodulkala. Therefore, the withdrawal of the rejections based on the combination of Marsh and Johson/Kodulkala is respectfully requested.

Claim 62:

Claim 62 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hecht (U.S. Patent No. 6,411,212) in view of Marsh. Applicant respectfully disagrees.

Hecht discloses a transponder that has a chargeable electrical energy store to achieve longer ranges than would be possible with a purely field-supplied response mode. The Office Action thus asserted that this approach inherently provides that the return signal range can be larger than the forward range. Applicant respectfully disagrees.

Although transmission using the energy store could increase the range in comparison with a passive mode that does not use the energy store, the comparison is for the return signal between the mode of using the energy store and the mode of not using the energy store. Such a comparison does not provide any indication in whether the range of the return signal is larger than the range of the forward signal transmitted from the interrogator to the transponder. Hecht does not show the Applicant claimed feature of “the return signal having a return range larger than the forward range” recited in claim 62. Marsh cannot cure this deficiency in Hecht. Thus, claim 62 is patentable over Hecht and Marsh.

New claim 87 further recites the limitation of “the first and second antennas of the radio frequency identification device are tuned to first and second non-overlapping frequency bands respectively”, which feature is not found in Marsh and Hecht.

Thus, at least for the above reasons, the pending claims are patentable over the cited references.

CONCLUSION

It is respectfully submitted that all of the Examiner's objections have been successfully traversed and that the application is now in order for allowance. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

Respectfully submitted,

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